REMARKS:

Claims 3, 6-7, 11, 13-14, 23-32, 34, 37-40, 44-45, 50, 53-55, 58, 60-64, 73, 75, 77, 80, 96-98, 100, 102-105, 116-124, 126-129, and 131-143 have been allowed.

The Office Action indicates that claims 108-109 will be allowable if rewritten in independent form including all limitations of the base claim and any intervening claims. Applicants respectfully contend that claims 108-109 are in condition for allowance because claim 106 is patentable for the reasons set forth below.

Claim 22 stands rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,912,008 (Mair). Applicants contend that claim 22 is patentable for the following reasons.

Claim 22 recites a transmitter for use in data transmission over a TMDS-like link. The transmitter includes circuitry configured for generating an output signal in response to audio data and asserting the output signal to an output for transmission over a channel of the link. The output signal modulates DC disparity of the channel and is indicative of the audio data.

Mair discloses a binary data encoding method which is a modification of conventional TMDS-encoding, and which replaces some of the DC balancing bits of conventional TMDS code words with bits indicative of auxiliary (e.g., audio) data. Code word sequences generated in accordance with Mair's method do include DC balancing bits, and Mair teaches that they should be DC balanced bit sequences. This is explicitly taught by Mair at col. 3, lines 6-19. There is no hint or suggestion determinable from Mair, and it is inconsistent with Mair's teaching, that DC disparity of a code word sequence should be modulated so as to be indicative of auxiliary data (as recited in claim 22) or that a transmitter should include circuitry configured for generating an output signal which is indicative of audio data (or other auxiliary data) and which modulates DC disparity of a channel of a TMDS-like link as recited in claim 22.

The Examiner cites Mair's teaching at col. 2, lines 6-11, that "at worst" Mair's DC balancing bits do not achieve a perfect DC balance (zero disparity) and instead "do not add" to a prexisting disparity (cumulated disparity between the number of previously transmitted

zeros and ones) in a bit sequence being transmitted. It cannot reasonably be contended that this teaching somehow amounts to a teaching that insertion of Mair's auxiliary data bits (in a code word sequence that includes DC balancing bits) in place of some but not all of the DC balancing bits would inherently (or might possibly) modulate the sequence's DC disparity such that the modulation is indicative of the auxiliary data bits (or other auxiliary data to be transmitted). Rather, Mair's teaching is clearly to choose the value of the next DC balancing bit (DC balance control bit "S9") to be inserted in the sequence such that the disparity of the encoded word "S0-S9" that corresponds to (i.e., includes and is determined in response to) the DC balancing bit, added to the sequence's prexisting disparity, will reduce the cumulated disparity if possible, but if this is not possible (i.e., depending on the particular values of the bits, D0-D7 and TC, to be encoded), the disparity of the encoded word "S0-S9" that corresponds to the DC balancing bit should be zero (so that, added to the prexisting disparity of the sequence, this zero value does not increase the cumulated disparity). Thus, the cumulated disparity of Mair's transmitted sequence is reduced to zero over a time of unpredictable duration (and in an unpredictable sequence of steps) determined by the unpredictable values of the bits (D0-D7 and TC) to be encoded, unless perturbed by the disparities (also unpredictable because it depends on the unpredictable values of bits D0-D7 and TC to be transmitted) introduced by the code words that happen to include auxiliary bits in place of DC balancing bits. The sequence of cumulated disparity values of Mair's transmitted sequence is thus unpredictable, and is not (and would not inherently be) indicative of any auxiliary data to be transmitted. For this reason, it cannot logically be contended that Mair somehow teaches or suggests that the DC disparity of a code word sequence should be modulated so as to be indicative of auxiliary data, or that the auxiliary bits inserted by Mair (in place of some but not all DC balancing bits) can somehow modulate the disparity of Mair's transmitted sequence in some predictable way (determined by a sequence of auxiliary data bits to be transmitted) so that the modulation of the disparity is indicative of the auxiliary data.

Claim 35 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Mair in view of U.S. Patent 6,507,672 ("Watkins"). Applicants contend that claim 35 as hereby amended is patentable over the cited references, considered individually or in combination, for the following reasons.

Amended claim 35 recites a transmitter for use in data transmission over a TMDS-like link. The transmitter includes circuitry configured for generating an output signal in response to auxiliary data and asserting the output signal for transmission, wherein the output signal is indicative of a stream of binary data words <u>that determine a DC disparity that varies over time within a time-varying envelope, the binary data words also determine video data, and variation of the envelope over time determines</u> an analog auxiliary signal indicative of the auxiliary data.

The output of Mair's encoding method is a sequence of binary bits that can be decoded by binary data decoding circuitry to determine a sequence of video data bits and a sequence of auxiliary (e.g., audio) data bits. It cannot reasonably be contended that Mair's binary bit sequence would inherently determine an analog auxiliary signal indicative of the auxiliary data bits that it encodes, as well as a sequence of video data bits, or that such a binary bit sequence could be generated in such a manner as to determine an analog auxiliary (e.g., analog audio) signal indicative of the auxiliary data bits that it encodes as well as a sequence of video data bits. Nor can it reasonably be contended that it would have been obvious to one of ordinary skill in the art to modify Mair's teaching to reach the invention of amended claim 35.

The relevant teaching of Watkins is apparently the assertion of binary data indicative of encoded video and audio data, decoding of the binary data to generate a stream of video data and a stream of audio data, digital-to-analog conversion of the stream of video data, and digital-to-analog conversion of the stream of audio data.

Neither Mair nor Watkins teaches or suggests a transmitter including circuitry configured for generating an output signal in response to auxiliary data and asserting the output signal for transmission, where the output signal is indicative of a stream of binary data words <u>that determine a DC disparity that varies over time within a time-varying envelope, the binary data words also determine video data, and variation of the envelope over time determines</u> an analog auxiliary signal indicative of the auxiliary data, as recited in amended

claim 35. Thus, claim 35 as amended is patentable over Mair and Watkins, considered individually or in combination.

Claims 106-107 and 110 stand rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Application Publication No. 2002/0163598 (Pasqualino). In response, Applicants contend that claims 106-107 and 110 as hereby amended are patentable for the following reasons.

Claims 106 and 110 pertain to transmission of video and auxiliary data during periods (separated by blanking intervals) having specific durations, rather than during blanking intervals.

Claim 106 recites a communication system, including a TMDS-like communication link (comprising at least one video channel) between a transmitter and a receiver. The transmitter is configured to transmit video data and auxiliary data to the receiver over the link during data transmission periods separated by blanking intervals. The data transmission periods include first periods <u>each having duration within a first range</u> and second periods <u>each having duration within a second range distinct from the first range</u>. The transmitter is configured to transmit the video data to the receiver over the video channel <u>only</u> during the first periods and to transmit auxiliary data to the receiver over the video channel <u>only</u> during the second periods. The receiver is configured to recognize each of the second periods and operate in an auxiliary data reception mode during each of the second periods, and to recognize each of the first periods and operate in a video data reception mode during each of the first periods.

Claim 110 recites a transmitter including circuitry configured to assert a signal indicative of video data and auxiliary data during data transmission periods separated by blanking intervals. The data transmission periods include first periods each having duration <u>within a first range</u> and second periods each having duration <u>within a second range distinct from the first range</u>. The signal is indicative of the video data <u>only</u> during the first periods and is indicative of the auxiliary data <u>only</u> during the second periods.

Pasqualino fails to teach or suggest asserting or transmitting video data only during periods (separated by blanking intervals) each having duration within a first range, and asserting or transmitting auxiliary data only during other periods (also separated by blanking intervals) each having duration within a second range distinct from the first range. Pasqualino neither teaches nor suggests that any of its periods for "Audio Transport" (as shown in Pasqualino's Fig. 7) must have (or desirably have) duration in a range that is distinct from the duration of any of the periods (active video periods) during which a transmitter transmits video data. The Office Action correctly asserts that Pasqualino teaches (with reference to Fig. 7) transmission of video data when control signals DE and A_DE are high. Pasqualino also teaches (with reference to Fig. 7) transmission of auxiliary (audio) data when control signal DE is low and control signal A_DE is high. However, Pasqualino neither teaches nor suggests that transmission of video data (i.e., transmission of a signal indicative of video data) should only occur during first periods (each having duration within a first range) and transmission of auxiliary data should only occur during second periods (each having duration within a second range distinct from the first range). During the periods in which Pasqualino transmits auxiliary data (e.g., the "Period for Audio Transport" of Fig. 7), Pasqualino also transmits a line header (e.g., the "LineHdr" of Fig. 7 or line header 540 of Fig. 5). The cited teaching of Pasqualino to transmit 24 bit words of video data and 16 bit words of audio data is irrelevant to the issue as to whether Pasqualino teaches transmission of video data only during periods each having duration within a first range and transmission of auxiliary data only during periods each having duration within a second range distinct from the first range).

The Examiner notes that the periods in which Pasqualino transmits video data are subject to jitter, the periods in which Pasqualino transmits audio data are subject to jitter, and that Pasqualino teaches transmission of 24-bit wide video data and 16-bit wide audio data. However, since either 24-bit wide data and 16-bit wide data can be transmitted in periods having a single common range of durations, it cannot reasonably be contended that the noted teaching of Pasqualino amounts to a teaching or suggestion to assert or transmit video data only during periods each having duration within a first range (whether subject to jitter or not), and to assert or transmit auxiliary data only during other periods each having duration (whether subject to jitter or not) within a second range distinct from the first range. Pasqualino's teaching to transmit 24-bit wide video data and 16-bit wide audio data is

irrelevant to the issue as to whether Pasqualino teaches transmission of video data only during periods each having duration within a first range and transmission of auxiliary data only during periods each having duration within a second range distinct from the first range. The Office Action does not identify an example of the latter teaching determinable from Pasqualino, and Applicants contend that Pasqualino lacks such teaching. Jitter may affect the measured duration of one block of data and alter that duration by some finite amount. However, jitter in the type of clocked transmission system disclosed in Pasqualino typically amounts to a small, unpredictable (stochastic) variation in duration on the order of no more than one or two clock periods. In a clocked system of this type, jitter is variation in clock edges from one cycle to another that is typically much less than the clock period. Therefore, even if jitter is manifested in a clock edge per clock cycle varying by a small amount, and that variation accumulates over an entire video or audio data transmission period, the total altered duration will typically be much less than one or two clock periods. Also, because jitter is a variation in clock edge in both the positive (delayed) and negative (advanced) directions, adding up n occurrences of jitter (clock edge variation) across a series of M clock periods (typically, M is large during a video or audio transmission) will not result in a total offset in edge (or variance in data transmission duration) of n multiplied by M. Rather, the total offset will typically be much less than n multiplied by M. Again, jitter is a stochastic phenomenon. In contrast, distinguishing one type of data from another by measuring distinct ranges of periods of audio or video data transmission (as contemplated by the rejected claims), during which each type of data is transmitted, is a deterministic and intentional phenomenon.

Thus, claim 106 (and each claim depending directly or indirectly therefrom) and claim 110 is patentable over Pasqualino.

It is respectfully submitted that the pending claims as hereby amended are in condition for allowance.

Respectfully submitted,

GIRARD & EQUITZ LLP

Dated: 02/09/2009 By: /Alfred A. Equitz/

Alfred A. Equitz
Reg. No. 30,922

Attorneys for Applicant(s)

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